

Appl. No.: 10/020,897  
Filed: December 19, 2001  
Amdt. dated 11/04/2005

**Amendments to the Claims:**

This listing of claims replaces all prior listings, and versions, of claims in the present application.

**Listing of Claims:**

1. (Canceled)
2. (Canceled)
3. (Currently Amended) A polar loop transmitter ~~according to claim 2~~, comprising:  
an envelope loop;  
a phase loop; and  
components disposed within each of the phase and envelope loops configured to match the transfer characteristics of the phase and envelope loops, wherein said matching components comprise a loop filter in each of the phase and envelope loops, the polar loop transmitter being operable over an operating frequency range, wherein each loop filter is configured so that the transfer characteristics of the phase and envelope loops are matched over the operating frequency range.
4. (Currently Amended) A polar loop transmitter ~~according to claim 2~~, comprising:  
an envelope loop;  
a phase loop; and  
components disposed within each of the phase and envelope loops configured to match the transfer characteristics of the phase and envelope loops, wherein said matching components comprise a loop filter in each of the phase and envelope loops, wherein each loop filter is configured so that the phase and envelope loops are of the same type and have substantially the same bandwidth and loop damping.

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5. (Currently Amended) A polar loop transmitter according to claim 3[[4]], including a power amplifier for providing an output signal, wherein the envelope loop includes an envelope control system for the output signal.

6. (Original) A polar loop transmitter according to claim 5, wherein the envelope control system includes a power supply modulator arranged to modulate the voltage supply of the power amplifier.

7. (Original) A polar loop transmitter according to claim 5, wherein the envelope loop includes an envelope detector.

8. (Original) A polar loop transmitter according to claim 7, wherein the envelope detector is connected to a bias control input of the power amplifier, whereby to provide the envelope control system.

9. (Original) A polar loop transmitter according to claim 5, further comprising compensation means disposed in the envelope loop for compensating for non-linearities in the envelope control system.

10. (Original) A polar loop transmitter according to claim 5, comprising first and second envelope detectors for detecting input and output envelopes respectively and a system for providing a difference signal representative of the difference between the input and output envelopes.

11. (Original) A polar transmitter according to claim 10, wherein said difference signal providing system comprises a comparator.

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12. (Original) A polar loop transmitter according to claim 10, further comprising a detector configured to detect loss of feedback control.

13. (Original) A polar loop transmitter according to claim 12, wherein the detector is operative on the difference signal.

14. (Original) A polar loop transmitter comprising:  
a power amplifier for amplifying an input signal having input phase and envelope components to produce an output signal having output phase and envelope components;  
an envelope loop including elements configured to produce an envelope difference signal representative of the difference between the input and output envelope components, said envelope loop having a loop transfer characteristic;  
a phase loop including elements configured to produce a phase difference signal representative of the difference between the input and output phase components, said phase loop having a loop transfer characteristic; and  
elements disposed within each of the phase and envelope loops configured to match the transfer characteristics of the phase and envelope loops.

15. (Canceled)

16. (Original) A portable communications device including a polar loop transmitter comprising:  
a power amplifier for amplifying an input signal having input phase and envelope components to produce an output signal having output phase and envelope components;  
an envelope loop including elements configured to produce an envelope difference signal representative of the difference between the input and output envelope components, said envelope loop having a loop transfer characteristic;

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a phase loop including elements configured to produce a phase difference signal representative of the difference between the input and output phase components, said phase loop having a loop transfer characteristic; and

elements disposed within each of the phase and envelope loops configured to match the transfer characteristics of the phase and envelope loops.

17-29. (Canceled)

30. (Currently Amended) An envelope feedback transmitter ~~according to claim 29~~  
including a power amplifier providing an output signal;  
a controller for controlling the envelope of the output signal; and  
a compensator for compensating for non-linear characteristics of the envelope controller,  
wherein the power amplifier has a bias control input, the feedback transmitter further comprising  
a difference signal generator means for providing a difference signal representative of the  
difference between input and output envelope components, wherein the difference signal is  
connected to the bias control input of the power amplifier to provide the envelope control means,  
wherein the difference signal generator comprises a comparator arranged to receive signals from  
first and second envelope detectors for detecting the input and output envelope components  
respectively, wherein the compensator is disposed between the output of the amplifier and the  
input to the comparator, and wherein the compensator comprises first and second compensation  
elements, the first compensation element being disposed between the first envelope detector and  
a first input to the comparator and the second compensation element being disposed between the  
second envelope detector and a second input to the comparator.

31. (Original) An envelope feedback transmitter according to claim 30, wherein the first and second compensation elements have a large signal transfer function which approximates to the inverse of the large signal transfer function of the envelope control means.

32. (Canceled)

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33. (Currently Amended) An envelope feedback transmitter according to claim 32 including a power amplifier providing an output signal,  
a controller for controlling the envelope of the output signal; and  
a compensator for compensating for non-linear characteristics of the envelope controller,  
wherein the power amplifier has a bias control input, the feedback transmitter further comprising  
a difference signal generator means for providing a difference signal representative of the  
difference between input and output envelope components, wherein the difference signal is  
connected to the bias control input of the power amplifier to provide the envelope control means,  
wherein the difference signal generator comprises a comparator arranged to receive signals from  
first and second envelope detectors for detecting the input and output envelope components  
respectively, wherein the compensator is disposed between the output of the comparator and the  
envelope controller, and wherein the compensation element has a linear transfer function with  
variable gain and a non-linear gain control.

34. (Original) An envelope feedback transmitter according to claim 33, wherein the non-linear gain control is connected to either one of the first and second envelope detectors.

35-46. (Canceled)